

Claims

1. A gas generator for an air bag comprising a housing having a gas discharge port, an ignition means chamber accommodating therein ignition means which is activated by the impact, and a combustion chamber accommodating therein a gas generating agent which is ignited and burnt to generate a combustion gas, a cylindrical filter disposed between the combustion chamber and the gas discharge port, in which the combustion gas passes through the filter and is discharged from the gas discharge port, wherein

an inner cylindrical shielding plate is disposed inside the cylindrical filter,

the inner cylindrical shielding plate is disposed such that its lower end opening peripheral edge comes into contact with a housing bottom surface and a space is formed between an upper end opening peripheral edge of the inner cylindrical shielding plate and a housing ceiling surface, a portion having excellent air permeability is provided between an inner peripheral surface of the cylindrical filter and the inner cylindrical shielding plate.

2. A gas generator for an air bag comprising a housing having a gas discharge port, an ignition means chamber accommodating therein ignition means which is activated by the impact, and a combustion chamber accommodating therein a gas generating agent which is ignited and burnt to generate a combustion gas, a cylindrical filter disposed between the

combustion chamber and the gas discharge port, in which the combustion gas passes through the filter and is discharged from the gas discharge port, wherein

an inner cylindrical shielding plate and an outer cylindrical shielding plate are respectively disposed inside and outside the cylindrical filter,

the inner cylindrical shielding plate is disposed such that its lower end opening peripheral edge comes into contact with a housing bottom surface and a space is formed between an upper end opening peripheral edge of the inner cylindrical shielding plate and a housing ceiling surface, a portion having excellent air permeability is provided between an inner peripheral surface of the cylindrical filter and the inner cylindrical shielding plate,

the outer cylindrical shielding plate is disposed such that its upper end opening peripheral edge comes into contact with the housing ceiling surface, a space is provided between the housing bottom surface and a lower end opening peripheral edge of the outer cylindrical shielding plate, and a gap is generated between the outer cylindrical shielding plate and a housing peripheral wall having the a gas discharge port.

3. A gas generator for an air bag according to claim 1 or 2, wherein the lower end opening peripheral edge of the inner cylindrical shielding plate comes into contact with the housing bottom surface, the upper end opening peripheral edge of the inner cylindrical shielding plate comes into contact with the housing ceiling surface, the upper end opening peripheral edge

side of the inner cylindrical shielding plate has a vent hole, a portion having excellent air permeability is provided between an inner peripheral surface of the cylindrical filter and the inner cylindrical shielding plate.

4. A gas generator for an air bag according to claim 2, wherein the outer cylindrical shielding plate is disposed such that its upper end opening peripheral edge comes into contact with the housing ceiling surface and the lower end opening peripheral edge of the outer cylindrical shielding plate comes into contact with the housing bottom surface, the lower end opening peripheral edge side of the outer cylindrical shielding plate has a vent hole, and a gap is generated between the housing peripheral wall having the a gas discharge port and the outer cylindrical shielding plate.

5. A gas generator for an air bag comprising a housing having a gas discharge port, an ignition means chamber accommodating therein ignition means which is activated by the impact, and a combustion chamber accommodating therein a gas generating agent which is ignited and burnt to generate a combustion gas, a cylindrical filter disposed between the combustion chamber and the gas discharge port, in which the combustion gas passes through the filter and is discharged from the gas discharge port, wherein an inner space of an inner cylinder disposed in a central portion of the housing forms an ignition means chamber, the ignition means chamber and the combustion chamber are in communication with each other through the communication hole formed in a peripheral wall of the inner

cylinder,

an inner cylindrical shielding plate is disposed inside the cylindrical filter, an upper end opening peripheral edge of the inner cylindrical shielding plate comes into contact with a housing ceiling surface and a combustion gas can pass between the lower end opening peripheral edge and a housing bottom surface, or the lower end opening peripheral edge of the inner cylindrical shielding plate comes into contact with the housing bottom surface and the combustion gas can pass between the upper end opening peripheral edge and the housing ceiling surface, a portion having excellent air permeability is provided between an inner peripheral surface of the cylindrical filter and the inner cylindrical shielding plate,

a communication hole formed in the peripheral wall of the inner cylinder faces the inner cylindrical shielding plate.

6. A gas generator for an air bag according to claim 5, wherein

when an upper end opening peripheral edge of the inner cylindrical shielding plate comes into contact with a housing ceiling surface and a space is formed between the lower end opening peripheral edge and the housing bottom surface, or when the upper end opening peripheral edge of the inner cylindrical shielding plate comes into contact with the housing ceiling surface and the lower end opening peripheral edge comes into contact with the housing bottom surface and plural vent holes are formed in the lower end opening peripheral edge,

a relationship between a forming position of a

communication hole, which is formed in the peripheral wall of the inner cylinder, in an axial direction of the housing and a position of a tip end of the inner cylindrical shielding plate or a forming position of the vent hole is set such that if a height from the housing ceiling surface to the housing bottom surface is defined as L ,

the communication hole is formed in a peripheral wall of the inner cylinder in the range of $0.05 L$ to $0.6 L$ from the housing ceiling surface,

the position of the tip end of the inner cylindrical shielding plate or the forming position of the vent hole exists in the range of $0.3 L$ to $0.8 L$ from the housing ceiling surface, and

the communication hole and the inner cylindrical shielding plate are exactly opposite to each other.

7. A gas generator for an air bag according to claim 5, wherein

when the lower end opening peripheral edge of the inner cylindrical shielding plate comes into contact with the housing bottom surface and a space is generated between the housing ceiling surface and the upper end opening peripheral edge of the inner cylindrical shielding plate, or when the lower end opening peripheral edge of the inner cylindrical shielding plate comes into contact with the housing bottom surface and the upper end opening peripheral edge of the inner cylindrical shielding plate comes into contact with the housing ceiling surface and plural vent holes are formed in the upper end opening

peripheral edge,

a relationship between a forming position of the communication hole, which is formed in the peripheral wall of the inner cylinder, in the axial direction of the housing and a position of the tip end of the inner cylindrical shielding plate or the forming position of the vent hole is set such that if a height from the housing bottom surface to the housing ceiling surface is defined as L ,

the communication hole is formed in the inner cylinder peripheral wall in the range of $0.05 L$ to $0.6 L$ from the housing bottom surface,

the position of the tip end of the inner cylindrical shielding plate or the forming position of the vent hole exists in the range of $0.3 L$ to $0.8 L$ from the housing bottom surface,

the communication hole and the inner cylindrical shielding plate face each other.

8. A gas generator for an air bag according to any one of claims 1, 2 and 5, wherein

the inner cylindrical shielding plate comprises an annular bottom surface and an annular peripheral wall provided vertically with the annular bottom surface, an outer diameter of the annular bottom surface is set greater than an outer diameter of the annular peripheral wall,

the annular bottom surface comes into contact with the housing ceiling surface or the housing bottom surface, an inner peripheral edge of the annular bottom surface abuts against the inner cylinder peripheral wall, or an outer peripheral edge of

the annular bottom surface abuts against an inner peripheral surface of the cylindrical filter.

9. A gas generator for an air bag according to claim 5 or 6, wherein

an outer cylindrical shielding plate is disposed outside the cylindrical filter,

one end opening peripheral edge of the outer cylindrical shielding plate comes into contact with the housing ceiling surface or the housing bottom surface, the other end opening peripheral edge is disposed at a distance from the housing bottom surface or the housing ceiling surface, and a gap is generated between the outer cylindrical shielding plate and the housing peripheral wall having the a gas discharge port.

10. A gas generator for an air bag according to claim 5 or 6, wherein

an outer cylindrical shielding plate is further disposed outside the cylindrical filter,

one end opening peripheral edge of the outer cylindrical shielding plate comes into contact with the housing ceiling surface or the housing bottom surface, the other end opening peripheral edge of the outer cylindrical shielding plate comes into contact with the housing bottom surface or the housing ceiling surface, the other end opening peripheral edge has a vent hole, a gap is generated between the outer cylindrical shielding plate and the housing peripheral wall having the gas discharge port.

11. A gas generator for an air bag according to any one

of claims 1, 2 and 5, wherein

a portion having excellent air permeability provided between an inner peripheral surface of the cylindrical filter and an inner cylindrical shielding plate is a cylindrical space provided between the inner peripheral surface of the cylindrical filter and the inner cylindrical shielding plate or a coarse structure of the cylindrical filter.

12. A gas generator for an air bag according to any one of claims 1, 2 and 5, wherein

a bulk density of the cylindrical filter is 1 to 5 g/cm³, and a thickness of the cylindrical filter is 3 to 10 mm.

13. A gas generator for an air bag according to any one of claims 1, 2 and 5, wherein

a width of the portion having excellent air permeability provided between a surface of the cylindrical filter and the inner cylindrical shielding plate is 0.5 to 3 mm.

14. A gas generator for an air bag according to any one of claims 1, 2 and 5, wherein

the ignition means comprises an electric igniter which is activated by igniting current and a transfer charge which is ignited by activation of the electric igniter, a gas generating agent having a combustion temperature of 1000 to 3000°C is used as the transfer charge, and a gas generating agent having a combustion temperature of 1000 to 1700°C is used as the gas generating agent for inflating the air bag, which is disposed in the combustion chamber.